May 3, 1866.

Lieut.-General SABINE, President, in the Chair.

In conformity with the Statutes, the names of the Candidates recommended for election into the Society were read from the Chair, as follows :—

John Charles Bucknill, M.D.
Rev. Frederick William Farrar.
William Augustus Guy, M.B.
James Hector, M.D.
John William Kaye, Esq.
Hugo Müller, Ph.D.
Charles Murchison, M.D.
William Henry Perkin, Esq.

The Ven. John Henry Pratt, M.A.
Capt. George Henry Richards, R.N.
Thomas Richardson, Esq., M.A.
William Henry Leighton Russell, Esq.
Rev. William Selwyn, D.D.
Rev. Richard Townsend, M.A.
Henry Watts, B.A.

The following communications were read :—

I. " Report on the Levelling from the Mediterranean to the Dead Sea." By Colonel Sir HENRY JAMES, R.E., F.R.S.   Received April 5, 1866.

The instructions for levelling from the Mediterranean to the Dead Sea having been received after the party had arrived at Jerusalem, it was thought best to level in the first place from Jerusalem to the Dead Sea during the cool months, and to complete the line to the Mediterranean at Jaffa, when the party were on their way home.

But in describing the line levelled, we may assume that it was made direct from Jaffa to the Dead Sea.

The line selected was that which runs across the maritime plain direct from Jaffa to Lydda, three miles beyond which, on the road to Beth Horon, the line turns to the right by Jimsu, Birfileeah, and Beit Sira; and from thence up the Wady Suleiman to El Jib, where it again joins the old Roman Road from Lydda, by Beth Horon to Jerusalem. But at about 1½ mile on the north road from the Damascus Gate, the line turns to the eastward over Mount Scopus, where it reached the altitude of 2724 feet, the height of the top of the large cairn on it. This was the highest point crossed between the Mediterranean and the Dead Sea.

From Mount Scopus the line follows the high ground to the Mount of Olives, and thence takes the road down to Bethany, and, following the road by Khan Hadhur to near Jericho, the line turns to the right within about a mile of the latter place, and was carried thence across the plain bordering the Dead Sea to a point opposite a small island in the sea itself.

Throughout the entire length of this line bench marks (⚐) have been cut at intervals, wherever it was practicable, on the fixed rocks, or on permanent objects.

The following is a list of the bench marks, with the distances between them :—

List of the Bench marks made in levelling the line from the Mediterranean to the Dead Sea in March, May, and June 1865.

No.	Place.	Distance, in Miles and Links.	Altitude.	Where cut.	Remarks.
			feet		
1.	Jaffa	0 0	3·800	castle wall	On the wall, 3800 feet above level of the Mediterranean.
2.	,, ...	0 1490	31·080	town wall	On gate at entrance to town.
3.	,, ...	0 7972	31·225	on fountain	On the fountain near Jaffa.
4.	,, ...	1 5831	55·735	on a well	At west side of road.
5.	Yazur	3 7656	85·405	on a well	At the east end of the village.
6.	Bethdagon	5 5843	91·435	on a well	At the west end of the village.
7.	Sephoneya	7 3157	126·540	on a wall	In Sephoneya village, near lone tree.
8.	,, ...	9 6495	143·630	on a tree	On a lone tree on maritime plain.
9.	Lydda	11 5922	164·770	garden wall.........	At east end of Lydda village.
10.	,, ...	14 0358	248·630	west angle of well..	Half a mile west of Jimzu village.
11.	Jimzu	14 5194	411·605	on rock	In road at thrashing-floor, Jimzu.
12.	,, ...	15 1714	478·725	on rock	On side of road, top of hill.
13.	,, ...	15 6495	549·000	on rock	On road, top of hill.
14.	,, ...	16 4284	573·035	on rock	West side of road.
15.	,, ...	17 0548	517·520	on rock	Side of road, and junction of Wady.
16.	,, ...	18 0479	650·075	on rock	At junction of road to Birfilleya.
17.	,, ...	18 7527	819·180	on rock	East side of road.
18.	,, ...	19 5196	747·865	on rock	On side of road.
19.	,, ...	21 7893	751·105	on rock	In centre of road.
20.	,, ...	25 7849	1,157·530	on rock	On side of road.
21.	,, ...	26 5121	1,251·470	on rock	On side of road.
22.	,, ...	27 3392	1,423·015	on wall	Corner of garden wall in Wady.
23.	,, ...	30 3428	2,064·945	on rock	South side of stream.
24.	,, ...	30 7617	2,258·250	on rock	Entrance to Wady Sulieman.
25.	,, ...	33 5560	2,419·505	on rock	East side of road.
26.	,, ...	37 1670	2,681·915	on stone	Near trigonometrical station, Jerusalem Survey.

TABLE (*continued*).

No.	Place.	Distance, in Miles and Links.	Altitude.	Where cut.	Remarks.
			feet		
27.	„	37 4078	2,685·390	on stone	In centre of road.
28.	Mount Scopus	37 6345	2,648·545	on rock	In centre of road.
29.	„	38 0612	2,688·700	on cistern	East side of road.
30.	„	38 1896	2,715·795	on rock	Near Gustam Pole.
31.	„	38 5086	2,662·905	on pillar	On east side of road.
32.	„	38 6530	2,603·875	on stone	West side of road, near junction.
33.	Mount Olivet	39 0236	2,623·790	on wall	West side of road.
34.	„	39 1721	2,662·500	on rock	Near summit of Mount Olivet.
35.	„	39 1731	2,665·080	surface...............	At trigonometrical station.
36.	Ascension	39 2794	2,643·220	on house	South side of road.
37.	Bethany	40 2409	2,281·825	on rock	Trigonometrical line, Bethany to Scorpion.
38.	„	40 4225	2,208·755	on rock	Near well, Bethany village.
39.	„	41 0148	2,018·350	on rock	North side of road at junction of fences.
40.	Well of the Apostles..	41 6063	1,519·615	on wall	Base of Bethany Hill.
41.	„ ...	42 2457	1,351·845	on rock	South side of road.
42.	„ ...	43 1606	1,163·060	on rock	South side of road.
43.	„ ...	44 0032	1,039·145	on rock	North side of road.
44.	„ ...	45 0375	902·515	on rock	Near junction of Nebi Musa.
45.	„ ...	47 0498	654·190	on stone	Opposite trees in valley.
46.	„ ...	47 3127	776·130	on rock	At the top of the hill.
47.	Khan Hadhur	48 5296	870·590	on rock	At entrance to cave opposite Khan.
48.	„	50 2545	537·010	on rock	On side of road.
49.	„	51 0706	451·510	on rock	At top of hill.
50.	Old Aqueduct	52 7866	— 89·715	on rock	On side of road.
51.	„	53 5174	— 99·035	on rock	On side of road.
52.	„	54 0339	— 209·890	on rock	North side of road.
53.	„	54 4465	— 477·045	on rock	In centre of road opposite house.
54.	„	62 2514	−1,273·215	on stone $\overset{13''}{\underset{\overset{\frown}{12''}}{\boxed{\ \longrightarrow\ }}}$	Sunk on the beach of the Dead Sea opposite island.
55.	„	62 2965	−1,292·135	level of sea	Height of Dead Sea on the 12th March, 1865.

At the distance of $3\frac{3}{4}$ miles beyond Khan Hadhur, on the road to Jericho, the level of the Mediterranean was crossed, and from thence towards the Dead Sea the levels are marked with the negative sign.

On the 12th of March, 1865, the party reached the Dead Sea, when its level was found to be 1292 feet below the level of the Mediterranean.; but from an examination of the drift wood on the shore, it was ascertained that at some time of the year, probably after the winter freshets, the water rises $2\frac{1}{2}$ feet higher, which would make the least depression 1289·5.

From inquiry amongst the Bedouins and European residents in Palestine, it was ascertained that during the early summer the level of the sea falls at least 6 feet below the level at which it stood on the day the levelling was taken, which would make the depression 1298 feet; and we may conclude that the maximum depression at no time exceeds 1300 feet.   Lieut. Symonds, R.E., in 1841, made the depression 1312·2 feet.

The soundings in the Dead Sea by Lieut. Vignes of the French Navy, gave a maximum depth of 1148 feet, making the depression of the bottom of the Dead Sea 2446 feet below the level of the Mediterranean.   The soundings in the Mediterranean, midway between Malta and Candia, by Captain Spratt, R.N., 'gave a depth of 13,020 feet, or a depression of the bottom five times greater than that of the bottom of the Dead Sea.

The levelling was executed by two independent observers, and from a comparison of the two sets of levelling, it is certain that the levels have been obtained with absolute accuracy to within 3 or 4 inches.

The establishment of a chain of levels across the country with bench marks cut on so many points, cannot but prove of the utmost importance for any future investigations, or for any more extended surveys in Palestine, such as are contemplated by the Society which has been formed since this survey was made, "for the accurate and systematic investigation of the archæology, the topography, the geology, and physical geography, &c. of the Holy Land, for Biblical illustration."

For the survey of Jerusalem itself, it was of the utmost importance, as it enabled us to connect all the levels in and about the city with the level of the Mediterranean, and to harmonize, so to speak, all the levels which have been taken.

II. "Note on the Amyl-Compounds derived from Petroleum." By C. Schorlemmer.   Communicated by Professor Roscoe. Received April 26, 1866.

In a former communication I have shown that the hydride of heptyl obtained from petroleum has a higher specific gravity than its isomers ethyl-amyl, and hydride of heptyl from azelaic acid.   The same is the case with their derivatives, and some of these isomeric compounds also show considerable differences in their boiling-points *.   I could not compare the different heptyl-compounds which I prepared with those of heptyl-alcohol formed by fermentation, as the latter substance is very little known, and I therefore considered it interesting to compare the amyl-compounds from fusel-oil with those obtained from petroleum.   From the latter substance I prepared a considerable quantity of pure hydride of amyl, which boiled constantly at 33°–35° C. ; and I did not succeed in lowering the boiling-point any further.   From this hydride other amyl-compounds were obtained in exactly the same way as the heptyl-com-

* Proc. Roy. Soc. vol. xiv. p. 464.